

4.3.5.1.6 *Biological Resources*

Construction of the MOX fuel fabrication facility would require 121 ha (300 acres) of land at each of the DOE sites analyzed and at the generic site. This includes areas on which plant facilities would be constructed, as well as areas used for construction laydown. Consultation with USFWS and State agencies would be conducted at the site-specific level, as appropriate to avoid potential impacts to threatened and endangered species, and other protected species and habitat.

Hanford Site

For analytical purposes it is assumed that the MOX facility would be located west of the 200 East Area. Impacts to terrestrial resources, wetlands, aquatic resources, and threatened species are discussed below.

Terrestrial Resources. Construction and operation of the MOX facility would result in the disturbance of terrestrial habitat equaling about 0.08 percent of Hanford. This includes areas on which plant facilities would be constructed as well as areas revegetated following construction. Vegetation within the assumed site would be destroyed during land clearing operations. The facility location falls within the sagebrush/cheatgrass or Sandberg's bluegrass community. Sagebrush communities are well represented on Hanford, but they are relatively uncommon regionally because of widespread conversion of shrub-steppe habitats to agriculture. Disturbed areas are generally recolonized by cheatgrass, a nonnative species, at the expense of native plants.

Construction of the MOX facility would affect animal populations. Less mobile animals within the project area, such as reptiles and small mammals, would not be expected to survive. Construction activities and noise would cause larger mammals and birds in the construction and adjacent areas to move to similar habitat nearby. If the area to which they moved was below its carrying capacity, these animals would be expected to survive. However, if the area was already supporting the maximum number of individuals, the additional animals would compete for limited resources which could lead to habitat degradation and eventual loss of the excess population. Nests and young animals living within the assumed site may not survive. The site would be surveyed as necessary for the nests of migratory birds prior to construction. Areas disturbed by construction, but not occupied by facility structures, would be of minimal value to wildlife because they would be maintained as landscaped areas.

Activities associated with facility operations, such as noise and human presence, could affect wildlife living immediately adjacent to the MOX facility. These disturbance may cause some species to move from the area. Disturbances to wildlife living adjacent to the facility would be minimized by preventing workers from entering undisturbed areas.

Wetlands. Construction and operation of the MOX facility would not affect wetlands since no wetlands exist near the assumed facility location. Groundwater would be used and wastewater would be discharged to evaporation/infiltration ponds; therefore, wetlands would not be affected.

Aquatic Resources. Construction of a MOX facility at Hanford would not impact aquatic resources since there are no surface water bodies sufficiently near the assumed facility location that would be directly affected by construction activities or indirectly affected by runoff. During both construction and operation, water would be withdrawn from the Columbia River through an existing intake structure so impacts to aquatic resources from impingement and entrainment would be minimal. Since the volume of water included represents a small percentage of the flow of the river, flow-related impacts to aquatic resources would be minimal. Wastewater would be discharge to evaporation/infiltration ponds; therefore, aquatic resources would not be affected.

Threatened and Endangered Species. It is unlikely that federally listed threatened and endangered species would likely be affected by construction and operation of the MOX facility; however, sagebrush habitat would be disturbed. The sagebrush community is important nesting/breeding and foraging habitat for several State-

listed and candidate species such as the ferruginous hawk, loggerhead shrike, western burrowing owl, pygmy rabbit, western sage grouse, sage sparrow, and sage thrasher. Preactivity surveys would be conducted as appropriate prior to construction to determine the occurrence of plant species or animal species in the area to be disturbed.

Nevada Test Site

It is assumed that the MOX facility would be located in the Frenchman Flat area of the NTS. Impacts to terrestrial resources, wetlands, aquatic resources, and threatened species are discussed below.

Terrestrial Resources. Construction and operation of the MOX facility at NTS would result in the disturbance of terrestrial resources equaling about 0.03 percent of NTS. This includes areas on which facilities would be constructed, as well as areas used for construction laydown. Vegetative cover within the assumed project area, which is primarily creosote bush (Figure 3.3.6–1), would be destroyed during land clearing operations. Creosote bush communities are well represented on NTS.

Construction of the MOX facility would affect animal populations. Less mobile animals within the project area, such as reptiles and small mammals, would not be expected to survive. Construction activities and noise could cause larger mammals and birds in construction and adjacent areas to move to similar habitat nearby. If the area to which they moved was below its carrying capacity, these animals would be expected to survive. However, if the area was already supporting the maximum number of individuals, the additional animals would compete for limited resources which could lead to habitat degradation and eventual loss of the excess population. Nests and young animals living within the proposed site may not survive. The site would be surveyed as necessary for the nests of migratory birds prior to construction. Areas disturbed by construction, but not occupied by facility structures, would be of minimal value to wildlife because of the difficulty in establishing vegetative cover in a desert environment.

Activities associated with operation, such as noise and human presence, could affect wildlife living immediately adjacent to the facility. These disturbances may cause some species to move from the area. Disturbance to wildlife living adjacent to the facility would be minimized by preventing workers from entering undisturbed areas.

Wetlands. Construction and operation of the MOX facility would not affect wetlands because there are no wetlands near the assumed facility location.

Aquatic Resources. Construction and operation of the MOX facility would not affect aquatic resources because there are no permanent surface water bodies near the assumed facility location.

Threatened and Endangered Species. The desert tortoise is a federally listed threatened species that could be affected by construction of the MOX facility at NTS. Construction activities such as land-clearing operations, trenches, and excavation could pose a threat to the tortoise. Measures from previous projects at NTS designed to avoid impacts to the desert tortoise have been implemented as a result of a Biological Opinion issued by the USFWS (NT DOI 1992b:8-15). Recommended mitigation measures included providing worker training, putting restrictions on vehicle speeds and off-road movement, conducting clearance surveys prior to surface disturbance, approving stop work authority if tortoises are found within work areas, removing tortoises from roadways and work areas, placing permanent and temporary tortoise proof fencing around trenches, landfills, and treatment ponds, inspecting trenches, and having biologists survey when heavy equipment is in use. The USFWS would be consulted, and USFWS recommendations would be implemented if NTS were selected as the location for the MOX facility.

[Text deleted.]

Any listed plant species (Table 3.3.6–1) located within the construction area would be lost during land clearing activities. Preactivity surveys would be required prior to construction to determine the occurrence of these species in the area to be disturbed.

During facility operation, vehicle traffic would pose a hazard to the desert tortoise similar to the hazard caused by current traffic. Extensive measures, including personnel training, are presently being taken to ensure that drivers on the NTS avoid the tortoise. [Text deleted.] Groundwater levels in Devils Hole cavern are not expected to change due to operation of the MOX facility (Section 4.3.5.1.4); therefore, impacts to the Devils Hole pupfish are not expected. Similarly, other rare endemic aquatic species found in the Ash Meadows area would not be affected.

Idaho National Engineering Laboratory

It is assumed that the MOX fuel fabrication facility would be located adjacent to the ICPP. Impacts to terrestrial resources, wetlands, aquatic resources, and threatened and endangered species are discussed below.

Terrestrial Resources. Construction and operation of the MOX fuel fabrication facility would result in the disturbance of terrestrial habitat equaling about 0.05 percent of INEL. This includes areas on which plant facilities would be constructed, as well as areas revegetated following construction. Vegetation within the assumed site would be destroyed during land clearing operations. Big sagebrush is the dominant plant within the site. Plant communities in which big sagebrush is the dominant overstory species are well represented on INEL, but are relatively uncommon regionally because of widespread conversion of shrub-steppe habitats to agriculture.

Construction of the MOX fuel fabrication facility would affect animal populations. Less mobile animals within the project area, such as reptiles and small mammals, would be lost during land-clearing activities. Construction activities and noise would cause larger mammals and birds in the construction and adjacent areas to move to similar habitat nearby. If the area to which they move was below its carrying capacity, these animals would be expected to survive. However, if the area was already supporting the maximum number of individuals, the additional animals would compete for limited resources which could lead to habitat degradation and eventual loss of the excess population. The closest pronghorn wintering area is located 4.8 km (3 mi) from the assumed site, therefore, wintering pronghorn should not be affected (IN DOE 1978a:222). Nests and young animals living within the project area could be lost during construction. The assumed site would be surveyed as necessary for the nests of migratory birds before construction. Upon completion of construction, revegetated areas would be of minimal value to most wildlife since they would be maintained as landscaped areas.

Activities associated with facility operations, such as noise and human presence, could affect wildlife living immediately adjacent to the MOX fuel fabrication facility. These disturbances may cause some species to move from the area. Disturbance to wildlife living adjacent to the facility would be minimized by preventing workers from entering undisturbed areas.

Wetlands. Construction and operation of the MOX fuel fabrication facility would not affect wetlands since there are no wetlands on the assumed site. Wetlands associated with the Big Lost River are located about 1.6 km (1 mi) from the facility location; therefore, impacts to these wetlands are not expected.

Aquatic Resources. Construction and operation of the MOX fuel fabrication facility would not impact aquatic resources since there are no surface water bodies on the assumed site. The nearest surface water body is in the Big Lost River which is located 1.6 km (1 mi) from the facility location.

Threatened and Endangered Species. It is unlikely that federally listed threatened or endangered species would be affected by construction of the MOX fuel fabrication facility on INEL, but several State-listed status species may be affected. [Text deleted.] Burrows and foraging habitat for the pygmy rabbit would be lost. Bat

species such as the Townsend's western big-eared bat may roost in caves and forage throughout the assumed site. One State-listed sensitive plant species could potentially be affected by construction of the facility. The plant species, tree-like oxytheca, has been collected at eight sites on INEL and at only two other sites in Idaho. If present, individual plants of this species could be destroyed during land clearing activities. Preactivity surveys would be conducted as appropriate prior to construction to determine the occurrence of these species in the area to be disturbed. No impacts to threatened and endangered species are expected due to facility operation.

Pantex Plant

It is assumed that the MOX facility would be located within Zone 11, which is a developed area that lacks natural vegetation. Disturbance to wildlife would be limited due to the disturbed nature of the assumed facility location; however, small mammals and some birds and reptiles could be displaced by construction. Since the area does not contain any wetlands or aquatic resources, these resources would not be affected by construction of the MOX facility. During operation, wastewater would be discharged to a site playa through an NPDES-regulated outfall. The additional water could lead to a minor increase in open water near the outfall, as well as a change in plant species composition. It is unlikely that federally listed threatened or endangered species would be affected by construction or operation of the MOX facility. Although the site has already been disturbed, it is possible that the State-listed Texas horned lizard could still be present. Preactivity surveys would be conducted as appropriate prior to construction.

Oak Ridge Reservation

It is assumed that the MOX fabrication facility would be located adjacent to the Y-12 Area of ORR. Impacts to terrestrial resources, wetlands, aquatic resources, and threatened and endangered species are discussed below.

Terrestrial Resources. Construction and operation of the MOX facility at ORR would result in the disturbance of terrestrial habitat equaling about 0.9 percent of ORR. This acreage includes areas on which the facility would be constructed, as well as areas used for constructing laydown. Vegetation within the area to be developed would be destroyed during land clearing. The area immediately adjacent to Y-12 is largely grassland or disturbed land; it is in turn bordered by oak-hickory forest or pine and pine-hardwood forest (Figure 3.6.6-1). While grassland and disturbed land would be affected most by construction, both forest types could also be impacted. None of the community types that could be disturbed are considered rare within the region.

Construction of the proposed facility would affect animal populations. Less mobile animals with the proposed project area, such as amphibians, reptiles, and smaller mammals, would be lost during land-clearing activities. Construction activities and noise would cause larger mammals and birds in the construction and adjacent areas to move to similar habitat nearby. If the area to which they moved was below its carrying capacity, these animals would be expected to survive. However, if the area was already supporting the maximum number of individuals, the additional animals would compete for limited resources which could lead to habitat degradation and eventual loss of the excess population. Nests and young animals living within the assumed site could be lost during construction. The site would be surveyed as necessary for the nests of migratory birds before construction. Upon completion of construction, revegetated areas would be of minimal value to most wildlife since they would be maintained as landscaped areas.

Activities associated with operation, such as noise and human presence, could affect wildlife living immediately adjacent to the proposed facility. These disturbances may cause some species to move from the area. Disturbance to wildlife living adjacent to the facility would be minimized by preventing workers from entering undisturbed areas.

Wetlands. Because the majority of the area in which the proposed facility would be located is upland, it is expected that direct impacts to wetlands could be avoided. Implementation of erosion and sediments control

measures would control secondary impacts. Since existing intake and discharge structures would be used during both construction and operation, it would not be necessary to disturb wetlands along the Clinch River or East Fork Poplar Creek. Any unavoidable impact to wetlands would be mitigated according to DOE policy set forth in 10 CFR 1022 and in accordance with the requirements of a COE permit.

During construction and operation, discharges would be directed to East Fork Poplar Creek. Discharges would have a minimal impacts on the flow of the stream and are not expected to affect associated wetlands. All wastewater discharges would be treated as necessary to meet NPDES permit requirements.

Aquatic Resources. Construction and operation of the MOX facility could cause water quality changes (primarily sediments leading and resulting turbidity) to Bear Creek or East Fork Poplar Creek as a result of soil erosion. Soil erosion and sediment control measures would be implemented to control erosion. Water requirements during both construction and operation would be met by existing site sources. Since existing intake and discharge structures would be used, direct disturbance to aquatic resources in the Clinch River would not occur. Water withdrawal during construction and operation would represent a very small percentage of the Clinch River's average flow and would have little affect on the flow of the river. Increases in impingement and entrainment impacts would, therefore, be minimal and would be unlikely to affect fish populations in the river.

During construction and operation, wastewater would be discharge to West Fork Poplar Creek. The small volume of wastewater discharged to the stream would be expected to have negligible impacts on aquatic resources during either construction or operation. In addition, NPDES-permit requirements would be met.

Threatened and Endangered Species. It is unlikely that federally listed threatened and endangered species are expected to be affected by construction of the MOX facility. The Tennessee dace is sensitive to sedimentation and actively seeks clean gravel for spawning. An increase in amount or duration of sediment runoff to Bear Creek during facility construction could impact this fish species. Preactivity surveys would be conducted as appropriate before construction to determine the occurrence of special status species in the area to be disturbed. No additional impacts are expected during operation of the facility.

Savannah River Site

It is assumed that the MOX fuel fabrication facility would be located about 1.6 km (1 mi) north of the P-Area. Impacts to terrestrial resources, wetlands, aquatic resources, and threatened and endangered species are discussed below.

Terrestrial Resources. Construction and operation of the MOX facility would result in the disturbance of terrestrial habitat equaling about 0.15 percent of SRS. Vegetation within the assumed facility location, which would be lost during land-clearing activities, consists of loblolly, longleaf, and slash pine. This community type is common on SRS and throughout the region.

Construction of the MOX facility would affect animal populations. Less mobile animals within the project area, such as amphibians, reptiles, and small mammals, would not be expected to survive. Construction activities and noise would cause larger mammals and birds to move to similar habitat nearby. If the area to which they moved was below its carrying capacity, these animals would be expected to survive. However, if the area was already supporting the maximum number of individuals, the additional animals would compete for limited resources which could lead to habitat degradation and eventual loss of the excess population. Nests and young animals living within the assumed site may not survive. The site will be surveyed as necessary for the nests of migratory birds prior to construction. Upon completion of construction, revegetated areas would be of minimal value to most types of wildlife because they would be maintained as landscaped areas.

Activities associated with facility operations, such as noise and human presence, could affect wildlife living immediately adjacent to the facility. These disturbances may cause some species to move from the area. Disturbance to wildlife living adjacent to the facility would be minimized by preventing workers from entering undisturbed areas.

Wetlands. Since the majority of the assumed site is upland, the facility could be located to avoid direct impacts to wetlands. Implementation of soil erosion and sediment control measures would control secondary impacts. Due to the relatively small amount of water required during both construction and operation, existing intake and discharge structures would be used. It would not be necessary to disturb wetlands along site streams. Any unavoidable impacts to wetlands would be mitigated. Wastewater discharge from construction and operation would be minimal and would not be expected to affect wetlands associated with the receiving stream. All wastewater discharges would be treated as necessary to comply with NPDES-permit requirements.

Aquatic Resources. Stormwater runoff during construction of a MOX fuel fabrication facility at SRS could cause temporary water quality changes in local tributaries to Par Pond. Water requirements during construction would be met by existing site sources. Since new intake and discharge structures would not be required, direct disturbance to aquatic resources in site water bodies would not occur. Wastewater discharges during construction would be minimal and would not be expected to affect aquatic resources.

Operation of the MOX fuel fabrication facility would necessitate water withdrawal from the Savannah River. Water would be withdrawn through existing intake structures. The small volume of water required would not affect the river's flow (Section 4.3.5.1.4), nor increase the entrainment and impingement of fish; thus, fish populations should not be affected. In compliance with the *Anadromous Fish Conservation Act* (16 USC 757a), populations of anadromous fish species on or near SRS would be sustained and their movement unobstructed by project construction and operation. During operation, nonhazardous wastewater would be discharged to local drainage channels. Flow increases are not expected to impact stream hydrology or aquatic resources. All discharges would be required to meet NPDES-permit requirements.

Threatened and Endangered Species. It is unlikely that federally listed threatened or endangered species are expected to be affected by construction or operation of a MOX fuel fabrication facility. Although bald eagles have been sighted in the vicinity of the assumed facility location, it is unlikely that construction and operation of the MOX fuel fabrication facility would affect this species. Although suitable foraging habitat for the red-cockaded woodpecker exists in the area, the woodpecker colonies are located far enough from the site that this species would not be directly affected by the MOX facility. Preactivity surveys would be conducted as appropriate before construction to determine the presence of any special status species on the proposed site.

Generic Site

For analytical purposes it is assumed that a MOX fuel fabrication facility could be located at an unspecified location within the deciduous forest, southeast evergreen forest, or grassland principal vegetation type. Impacts to terrestrial resources, wetlands, aquatic resources, and threatened and endangered species are discussed below.

Terrestrial Resources. Construction and operation of a MOX fuel fabrication facility would result in the direct disturbance of terrestrial resources. Surrounding areas could be indirectly affected by erosion and sedimentation. Construction of the facility would affect animal populations. Specific impacts would vary with the particular site chosen; however, certain general types of impacts could be expected regardless of location. Less mobile animals within the project area, such as amphibians, reptiles, and small mammals, would not be expected to survive. Construction activities and noise would cause larger mammals and birds to move to similar habitat nearby. If the area to which they moved was below its carrying capacity, these animals would be expected to survive. However, if the area was already supporting the maximum number of individuals, the additional animals would compete for limited resources which could lead to habitat degradation and eventual loss of the excess population. Nests and young animals living within the assumed facility location may not survive. The

location will be surveyed as necessary for the nests of migratory birds prior to construction. Upon completion of construction, revegetated areas would be of minimal value to most types of wildlife because they would be maintained as landscaped areas.

Disturbances associated with both construction and operation, such as noise and human presence, could affect wildlife living adjacent to the facility. These disturbances could cause some species to move from the area. Disturbance to wildlife living adjacent to the facility would be minimized by preventing workers from entering undisturbed areas.

It is not possible to identify the particular vegetative communities to be disturbed since the location of the facility is not known; however, development could take place within the deciduous forest, southeast evergreen forest, or grassland principal vegetation type (Section 3.11.6). Due to previous disturbance, vegetation found at a particular location could vary considerably from that which may have once occurred. In fact, the presence of natural climax communities in certain areas could be considered uncommon and, thus, sensitive to development. For example, little native grassland exists due to the extensive conversion of this community to agriculture use. Tiered NEPA documentation will address site-specific impacts.

Wetlands. Wetlands could be affected either directly or indirectly by construction of a MOX fuel fabrication facility. Clearing and grading operations could result in the direct loss of wetlands, although proper placement of the facility within the overall site would eliminate or reduce the potential for such loss. Where direct impact is unavoidable, mitigation measures would be developed consistent with 10 CFR 1022 and in accordance with the conditions of a COE permit, if applicable. This would limit the disturbance to the smallest possible area, and mitigation measures would offset wetland loss.

Indirect impacts to wetlands from a MOX fuel fabrication facility could occur as a result of stormwater runoff carrying sediments to wetlands adjacent to disturbed areas. Changes in hydrology and soils could occur as a result of alterations in water levels and the buildup of sediments. These changes could, in turn, change the vegetative composition of the wetland.

The potential to affect wetlands would depend on where the facility was located. Although wetlands occur in each of the principal vegetation types within which a MOX fuel fabrication facility could be located, they are most prevalent in the southeastern evergreen forest, southwestern and northwestern portions of the deciduous forest, and the northern portion of grassland community regions of the site area. Thus, if the commercial MOX fuel fabrication facility were constructed in one of these areas, there would be a greater potential to impact wetlands. However, even within these regions, wetlands could be largely avoided during the siting process. Site-specific impacts will be addressed in tiered NEPA documentation.

Aquatic Resources. During construction of a MOX fuel fabrication facility, potential impacts to aquatic resources could result from stormwater runoff. Runoff could alter flow rates, increase turbidity, and result in sedimentation of stream beds. These impacts could, in turn, cause temporary and permanent changes in species composition and density, and could alter breeding habitats. Operational impacts to aquatic resources would be expected to be minimal since wastewater volumes would be minimal and would be discharged through an NPDES-permitted outfall. As discussed in Section 3.11.6, a wide variety of aquatic resources occur within the principal vegetation types within which this facility could be located. Since a site has not been selected for the commercial MOX fuel fabrication facility, it is not possible to determine which aquatic resources would be affected. Site-specific impacts will be determined in tiered NEPA documentation.

Threatened and Endangered Species. Construction and operation of the MOX fuel fabrication facility would have the potential to impact threatened and endangered species. Sources of impacts would be similar to those discussed above for terrestrial resources, wetlands, and species (and critical habitats) that are sensitive to disturbance and whose existence may be threatened by development. During the siting process, concern for

these species would be a primary consideration. Further, once a site was chosen, consultation with the USFWS and the appropriate State agency(s) would take place to ensure that threatened and endangered species would be protected. Potential impacts to individual species, necessary consultation, and protective measures will be addressed in site-specific NEPA documentation.